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ABSTRACT

This paper synthesizes the results of recent research on the labor market outcomes associated with participation in secondary vocational education. It is based on 10 studies conducted with national data and reported since passage of the 1976 amendments to the Vocational Education Act of 1963. Despite the problems of analyzing vocational outcomes because of student self-selection and the great variability in secondary vocational programs, some recurring results have been found. On the basis of these findings, the following conclusions appear warranted: (1) vocational preparation in business and office courses reduces the amount of time that young women will be unemployed after they leave high school by about 1 to 2 weeks per year; (2) vocational preparation in business and office courses increases the average weekly earnings of young women after they leave high school by about $10 to $20 per week; (3) about half of all females who receive vocational preparation in business and office skills and about half of males who receive training in trade and industrial education in high school obtain jobs using the skills they studied; and (4) males who receive high school training in trade and industrial education are more likely than males without such training to obtain jobs in the skilled trades, while females trained in business and office skills are more likely than those without such training to obtain clerical jobs. (Data were conclusive only for office occupations education and trade and industrial education.) (KC)

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RECENT RESEARCH ON LABOR MARKET OUTCOMES OF SECONDARY VOCATIONAL EDUCATION

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FOREWORD

On October 27 and 28, 1982, a small convening was held at the National Center for Research in Vocational Education on the topic of labor market outcomes associated with participation in secondary vocational education. The purpose of this convening was to examine recent research on this topic and to prepare a summary statement of consistent findings from this research. To assist in this task several of the individuals who had conducted the research were invited to take part in the convening.

On behalf of the National Center, I wish to express our appreciation to the following invited participants for their assistance in this task: Thomas Daymont, Temple University; Eric Fredland, U.S. Naval Academy; John Grasso, West Virginia University; Walt Haney, Huron Institute; and Thomas Steinmeier, Texas Technological University.

These individuals met with a small number of National Center staff (who are listed in the Appendix) and with Rupert Evans, University of Illinois, who was in residence at the National Center as a visiting scholar. The participants reviewed a preliminary summary of the research that had been prepared by Morgan Lewis, National Center staff member, and suggested changes, additions, and deletions. A revised draft was prepared incorporating these suggestions and submitted to the participants for an additional review.

This report attempts to reflect the best present knowledge on the labor market outcomes associated with participation in secondary vocational education. While the author has the sole responsibility for the final contents of this report, these contents do reflect as well as possible his assessment of the consensus of the convening participants.

The conduct of the convening and the preparation of this report were supported with funds from the Office of Vocational and Adult Education, U.S. Department of Education. The project was conducted in the Evaluation and Policy Division, which is directed by N. L. McCaslin. Sherri Trayser performed the word processing and Janet Kiplinger the editing in the preparation of this report.

Robert E. Taylor
Executive Director
The National Center for Research
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EXECUTIVE SUMMARY

This paper synthesizes the results of recent research on the labor market outcomes associated with participation in secondary-level vocational education. It is based on ten studies conducted with national data and reported since passage of the 1976 amendments to the Vocational Education Act of 1963. Coauthors of eight of the ten reports of these studies participated in a convening that discussed the preparation of this summary statement.

Assessing the outcomes associated with vocational education is an extremely complex problem. The major difficulty arises from the fact that students select the kind of education they follow in high school. There are individual characteristics that are associated both with the choice of high school education and with experiences in the labor market. Some of these characteristics are known and can be measured, but there are others that are measured poorly, if at all. The extent to which these characteristics have independent influences on education choices and labor market outcomes remains undetermined. Until this is resolved, some uncertainty will remain in any estimates of the effects of high school vocational education.

Coupled with this self-selection of education is the great variability in secondary vocational programs. These programs include many different occupational areas and vary further in quality and extent of student participation. Finally, the period in which the data summarized in this paper were collected was the late 1960s and the 1970s. During this period, there were more new labor market entrants and more vocationally prepared graduates than in any other time in the nation's history. The large number of vocationally prepared graduates may have tended to minimize any labor market advantage their training conferred.

Despite these analytic problems, certain recurring results have been found in most studies. On the basis of these findings the following conclusions appear warranted:

1. Vocational preparation in business and office courses reduces the amount of time that young women will be unemployed after they leave high school by about one to two weeks per year.

2. Vocational preparation in business and office courses increases the average weekly earnings of young women after they leave high school by about $10 to $20 per week. Young men from trade and industry courses sometimes earn more, but this is usually because they work more hours per week.

3. About half of all females who receive vocational preparation in business and office skills and about half of all males who receive training in the trade and industry areas while in high school obtain jobs where they use the skills they studied.

4. Males who receive training while in high school in the trade and industry area are a little more likely than similar males without such training to obtain jobs classified as skilled trades. Females who received training in business and office skills are more likely than females without such training to obtain clerical jobs.

These conclusions are not about vocational education in general, but about the two areas that have the largest enrollments and for which the most adequate evidence is available. The lack of adequate evidence for the other areas precludes the drawing of any conclusions about them. This should not be interpreted to mean that training in these areas has no effect. Where the evidence is best, it suggests that high school vocational education does influence some labor market outcomes.

INTRODUCTION

The labor market outcomes associated with participation in high school vocational education have been a topic of continuing research interest since passage of the Vocational Education Act of 1963. This act, together with the Area Redevelopment Act of 1961 and the Manpower Development and Training Act of 1962, marked the beginning of an era of active federal involvement in the development of the human resources of the nation. With this federal involvement came a corresponding interest in evaluating the effectiveness of all training programs funded under these acts, including vocational education.

There have been two major periods of activity with regard to vocational eduction outcomes. One followed passage of the 1963 act and included studies by Eninger (1965), Kaufman et al. (1967), Corrazzini (1968), Taussig (1968), Hu et al. (1969), and Sommers, Sharp and Myint (1971). The second major period followed passage of the 1976 amendments to the 1963 act. This period has included the studies listed in chronological order in table 1.

These two groups of studies differ considerably in the sources of their data and the sophistication of their analyses. All of the first group used data collected specifically for those studies, often with fairly small samples that had limited geographic representation. The studies conducted in the second period reflect a major advance in the quality of data available for analysis. All of the studies in table 1 used data from national longitudinal studies of young people, mainly the National Longitudinal Surveys of Labor Market Experience (Center for Human Resource Research 1981) and the Longitudinal Study of the High School Class of 1972 (Riccobono et al. 1981).* Several of the studies in table 1 used information from school records to assess the extent of participation in vocational courses. This represented a major methodological improvement over previous studies that had relied upon self-report by former students of the curricula they had followed while in high school.

The interest in the labor market outcomes associated with participation in high school vocational education does not appear to arise from the size of the federal investment in this field. At its peak in the 1979-80 school year, federal expenditures on all levels of vocational education were about $735,000,000, less

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*The National Longitudinal Surveys of interest in relation to this paper consist of three separate cohorts. In table 1 these cohorts are referred to as NLS young men, which began in 1966, NLS young women, which began in 1968, and NLS new youth which began in 1979.

TABLE 1

REPORTS ON OUTCOMES ASSOCIATED WITH
PARTICIPATION IN PUBLIC VOCATIONAL EDUCATION

Author/ Date	Data Examined	Sample Used	Curriculum Definition	Outcomes Reported[a]			
				1	2	3	4
Grasso and Shea 1979	NLS, young men 1966 to 1973, young women 1968 to 1972	In school and 10 to 15 years total schooling	Self-report	X	X		X
Wiley and Harnischfeger 1980	Class of 1972 to 1976	High school graduates	Administrator designation, information from school records	X	X		
Fredlander and Little 1980	NLS adult men	White males who were ages 45-49 in 1966	Self-report		X		
Gustman and Steinmeier 1982	NLS young men and women to 1972, class of 1972 to 1976	NLS, 17 year olds at initial survey, high school graduates only	Self-report, information from school records	X	X		
Woods and Haney 1981	Class of 1972 to 1976, NLS young men to 1976, NLS new youth base year	High school graduates to 15 years total schooling, limited analyses of dropout	Self-report, some analyses with information from school records	X	X	X	X
Meyer 1981	Class of 1972 to 1979	High school graduates	Information from school records	X	X		

TABLE 1
(continued)

Author/ Date	Data Examined	Sample Used	Curriculum Definition	Outcomes Reported[a] 1	2	3	4
Campbell et al. 1981	NLS New Youth to 1980	High school graduates for whom school transcripts were available	High school transcripts	X	X	X	X
Mertens and Gardner 1981	Special survey of 1,539 persons ages 20 to 34, NLS young men 1966 to 1976, young women 1968 to 1978, Class of 1972 to 1979	High school graduates	Self-report	X	X	X	X
Rumberger and Daymont 1982	NLS New Youth to 1980	Not enrolled 9 to 12 years total schooling for whom school transcripts were available	High school transcript	X	X	X	X
Gardner, Campbell and Seitz 1982	NLS New Youth to 1981	High school graduates for whom school transcripts were available	High school transcript	X	X	X	X

[a]Outcomes Reported
1=Measures of employment-unemployment
2=Hourly, weekly, or yearly earnings
3=Employment in a job related to field of training
4=Occupational category and status

than 0.2 percent of the total federal budget and only 11 percent of total federal, state, and local expenditures for vocational education (National Center for Education Statistics 1982). The interest seems to stem from a widespread skepticism about the value of training for occupations at the high school level. There are many arguments on both sides of this issue, but if a clear labor market advantage were found for vocational participation, holding as well as possible all other factors equal, many of these arguments would be moot. Conversely, it is difficult to justify providing skill training if it is not associated with higher wages, more stable employment, or other appropriate measures of labor market experience.

FOCUS OF THE PAPER

This paper synthesizes the major findings from the studies that are listed in table 1 regarding the labor market outcomes associated with participation in high school vocational education. All of the studies listed were conducted using information from samples that are representative of the nation as a whole and were published since the passage of the 1976 amendments to the Vocational Education Act of 1963.

It is generally recognized that secondary vocational education is not a uniform curriculum. It varies both across and within occupational areas. Some of these studies attempted to analyze separate occupational areas, but typically the only areas with sufficient numbers of respondents to yield reliable results are business and office and trade and industry.* Of these two, business and office is the more uniform. Virtually all the students in this area take training in typing and most also take bookkeeping, shorthand, and office practice (Seitz 1982). Training available under the trade and industry category, however, includes such diverse occupational areas as automobile mechanics, welding, carpentry, drafting, electronics, and cosmetology, to name only the six most popular during the 1979-80 school year (National Center for Education Statistics 1982).

In addition to this variability in content, Campbell, Orth, and Seitz (1981) have documented the wide variability in extent of participation in vocational courses. Five distinct patterns of course-taking have been identified, ranging from students labeled "Concentrators," who take a large number of interrelated vocational courses, to those labeled "Incidental/Personal," who take one or two courses apparently out of personal interest or as part of occupational exploration. Although undocumented, there is probably an equally wide variability in quality of programs.

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*Representative national samples of the total youth population do not contain enough respondents in the other vocational areas to yield sufficient numbers for analysis.

Before summarizing the results for the outcome variables listed in table 1, the nature of the labor market on which they are based should be noted. The oldest data analyzed in the studies were collected in 1966 and the most recent in 1981. There has been no other period in the United States when there was a greater supply of entry-level workers. The combined effects of the 1946 to 1964 baby boom and the re-entry of women into the labor force yielded an unprecedented number of individuals seeking entry level employment. This large supply of job seekers undoubtedly tended to depress the wages for all new labor market entrants. Furthermore, the increases in the number of young people with high school vocational preparation during this period may have tended to minimize any labor market advantages this training conferred (Gustman and Steinmeier 1979).

LABOR MARKET OUTCOMES

The main labor market outcomes examined in the ten studies summarized in table 1 are employment-unemployment, earnings, relationship between training and employment, and occupational category and status. In each of the studies, the experiences of former students with some degree of vocational training (defined as indicated in the table) were compared to various other similar students with less vocational training but with similar levels of educational attainment in general academic courses. In most cases, those in the samples selected for analysis had less than sixteen years of formal education, and regression techniques were used to control the effect of other characteristics, such as sex and race, on the outcome variables. To the extent that these characteristics were accurately measured and included in the regression analyses, those studies provide estimates of the independent, or net, effect of vocational training on the outcomes examined.

None of these studies, however, have any controls for the self-selection of students into vocational courses. Currently available models of the experiences of recent labor market entrants explain a fairly small percentage of individual variability. Models incorporating fifteen or twenty meaures of individual characteristics and educational experiences typically explain less than 10 percent of the variability in earnings or employment. It seems likely that there are other individual traits not included in these models that influence both the selection of high school courses and subsequent experiences in the labor market. Until controls for self-selection are included in the analyses of educational effects, there will be some uncertainty whether an observed result is due to a particular educational experience or due to unmeasured characteristics of individuals that led them to take part in that experience. The results summarized next reflect the best evidence currently available on the labor market outcomes associated with participation in high school vocational education.

Employment-Unemployment

The standard method for defining employment and unemployment developed by the U.S. Bureau of Labor Statistics requires that an individual either hold a job or be actively seeking employment in the civilian labor market. Members of the military, full-time homemakers, students who do not want to work, the physically disabled, and discouraged workers who are not seeking jobs because they think none are available are all excluded from the definition. Nine of the ten studies in table 1 examined employment-unemployment and all used measures that were conceptually derived from the Bureau of Labor Statistics' definition. Three different measures are reported: (1) employment status at the time of the survey, (2) total weeks employed in the year prior to the survey, or (3) total weeks unemployed in the prior year.

When the first measure was used--status at the time of the survey--only Grasso and Shea found significantly less unemployment for vocational graduates. Woods and Haney, and Mertens and Gardner did not find a statistically significant advantage, but Campbell et al. found a consistent, albeit nonsignificant, tendency for higher levels of participation in vocational courses to be associated with less unemployment.

On the other two measures, there was a clear tendency for female vocational graduates, particularly from business and office programs, to either be employed more weeks or, conversely, unemployed fewer weeks per year. The differences in employment between vocational and comparison groups were usually about one to two weeks per year.

Among males, increased employment was not as consistently associated with vocational preparation. Rumberger and Daymont and Gardner, Campbell and Seitz found less unemployment for students with extensive vocational preparation. Rumberger and Daymont estimate that a half day in vocational courses for a school year (about three credits) would be associated with about one to one and one-half fewer weeks of unemployment per year. The other studies, however, did not find such difference among males with and without vocational preparation.

Earnings

The evidence on earnings follows a similar pattern to that of employment. Women who received high school vocational preparation in business and office courses consistently were found to earn more than their counterparts without such preparation. The size of this advantage ranges from low estimates of $9.00 to $11.00 per week reported by Gustman and Steinmeier

and Meyer, to a high of about $20.00 reported by Woods and Haney.*

The evidence for males is much more mixed. Wiley and Harnischfeger found a clear earnings advantage for vocational preparation, but this diminished over time. Fredland and Little found a long term advantage if the training was used in current employment.**

Four studies (Gustman and Steinmeier; Meyer; Mertens and Gardner; and Gardner, Campbell, and Seitz) found advantages in hourly wages for those who took certain vocational programs, usually trade and industry, or in weekly or annual earnings. These advantages were often realized because vocational preparation was found to be associated with working more hours per week. The four remaining studies (Grasso and Shea, Woods and Haney, Campbell et al., and Rumberger and Daymont) found no earnings advantage from vocational preparation for males.

Employment Related to Training

Whether or not individuals obtain jobs in the occupational areas in which they were trained has an intuitive appeal as a criterion by which to evaluate training programs. Unfortunately, translating that appeal into an objective and reliable measure of training-employment relationship is no easy task. Two main approaches are used. One asks former students to rate the similarity between their training and the skills needed on their jobs. The Mertens and Gardner study used this approach. The other method is to classify both the training and employment according to standard educational and occupational codes and to compare them using a "crosswalk" that cross-classifies the two codes. The Campbell et al. and Rumberger and Daymont studies used this approach. Woods and Haney used both methods.

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*All earnings were converted to constant 1978 dollars using the Consumer Price Index. For some studies this required making conversions from other base years that were reported.

**The Fredland and Little study differs sharply from others summarized in this paper in terms of the characteristics of their sample, which consisted of white males who were forty-five to forty-nine in 1966 and had received their military or civilian vocational training during or shortly after World War II. All of the other samples consist of young people who left high school during the 1960s or later.

The problem with the first approach is that subjective ratings tend to be lenient. Most respondents, even those who received little occupational preparation, tend to see relationships between what they studied and the skills needed on the job. The problem with the second approach is the low level of correspondence between some of the educational and occupational codes. This problem is particularly acute in matching the various educational programs classified in the general category of trade and industry with the many varied occupations classfied as skilled trades. When the match is made at this level, training and employment in such diverse skills as carpentry and auto mechanics, or cosmetology and welding, would be considered related. There is much closer correspondence between the classifications of vocational programs and occupations in the other crosswalk categories.

What is of interest, given the difficulties with these methods, is the similarity of the results they yield. In the Mertens and Gardner study, 60 percent of former trade and industry students reported they used the skills they studied in their most recent jobs "a great deal" or "a fair amount."* When Woods and Haney and Rumberger and Daymont used different education-occupation crosswalks, the results they obtained for trade and industry relatedness for men were 53 percent and 65 percent. The corresponding figures for females from business and office programs were 65 percent in related jobs as measured by respondents' rating (Mertens and Gardner), and crosswalk results of 58 percent (Woods and Haney) and 60 percent (Rumberger and Daymont) in related jobs.**

These results were obtained for the two program areas with the largest enrollments, and as discussed previously, the figures for business and office probably reflect a much closer match than similar figures for trade and industry. The rates for other programs were generally lower with the medians falling in the 25 to 35 percent range. Campbell et al. found that the strongest outcome of increased participation in interrelated vocational courses was to increase the likelihood of obtaining related employment.

Occupational Category and Status

Former students with vocational preparation have some tendency to obtain different types of jobs than other students.

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*These were the two highest ratings. The other two alternatives were "not very much" and "not at all."

**The percentage from Woods and Haney are for whites only. The corresponding figures for blacks are slightly lower. The other two studies did not report results by race.

Males who took trade and industrial programs are a little more likely to obtain skilled jobs, and females from business and office programs are more likely to obtain clerical positions. For females, these clerical positions were associated with significantly higher scores on the Duncan socioeconomic index.

Longitudinal analyses by Grasso and Shea, Woods and Haney, and Mertens and Gardner found a tendency for most young workers to move up in skill levels over time. Grasso and Shea's analysis suggest that vocational students were progressing at a slower rate than students from other curricula, but Woods and Haney found that when educational attainment was controlled, there was no such difference.

CONCLUSIONS

The results summarized in this paper are based primarily on longitudinal studies of four separate samples of young people. Different investigators have used different specifications to select and analyze the data from these samples and have obtained somewhat different results. Overall, however, there is more agreement than disagreement. Considering the variability that exists across programs regarding content, quality and extent of student participation and that also exists with regard to the labor markets in which young people seek jobs, the surprising fact is not that there is disagreement but that some fairly consistent results are found. The following conclusions appear warranted based on the information currently available:

1. Vocational preparation in business and office courses reduces the amount of time that young women will be unemployed after they leave high school by about one to two weeks per year.

2. Vocational preparation in business and office courses increases the average weekly earnings of young women after they leave high school by about $10 to $20 per week. Young men from trade and industry courses sometimes earn more, but this is usually because they work more hours per week.

There are several possible explanations for the labor market advantages consistently found for females who received business and office training. The skills taught in this area are the most standardized of any vocational program. They are applicable in any office setting in any part of the country. The demand for office workers since the late 1960s, the period covered by most of these studies, has been steadily increasing. In addition, office work is one of the few skilled areas where there is screening of the prospective employees on the basis of an easily

administered measure of performance--a timed typing test. Vocationally prepared students who have learned one of the basic office skills can easily demonstrate their proficiency, and this appears to give them an advantage over similar job seekers without this preparation.

Having said this, it should be acknowledged that the advantages associated with business and office training are not usually found for males. The failure to find signficant effects for males may be due to the smaller number who take this training, or it may be that employers are less likely to hire males for these jobs. The advantages typically found for females are in jobs that are traditionally female dominated. While business and office training confers an earnings and employment advantage to females, by this very fact it may also contribute to continuing sex stereotyping in the labor force.

3. About half of all females who receive vocational preparation in business and office skills and about half of all males who receive training in the trade and industry areas while in high school obtain jobs where they use the skills they studied.

4. Males who received training while in high school in the trade and industry area are a little more likely than similar males without such training to obtain jobs classified as skilled trades. Females who received training in business and office skills are more likely than females without such training to obtain clerical jobs.

The seemingly simple concept of employment in jobs that are related to training has proven very difficult to measure in an acceptable fashion. Nevertheless, the attempts that have been made using quite different methods tend to yield roughly similar results. Furthermore, the employment patterns of former high school students with and without vocational preparation are a little different. Taken together, these two pieces of evidence suggest that a sizeable percentage of former students use the vocational preparation they received in high school in the jobs they obtain. The size of this percentage varies by program area and sex, but tends to cluster in a range of about 30 to 60 percent.

This paper has examined only one limited aspect of the many objectives that high school level vocational education is designed to achieve. It is further limited in that it has focused on those outcomes that have been examined most frequently in recent research. The evidence that was summarized has generally indicated some labor market advantages, particularly for females who were in business and office programs, or has been mixed, particularly for males who were in trade and industry programs. These are the areas for which the most information is available.

The failure to find effects for the other areas may reflect the lack of sufficient evidence for these programs due to the small number of respondents from these programs who are included in the national data bases. This suggests caution in drawing negative conclusions on the basis of findings demonstrating no significant difference between former high school students with and without vocational preparation. One should not conclude on the basis of inadequate evidence that high school vocational education has no effect on subsequent labor market experience when the most adequate evidence indicates that it does.

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APPENDIX

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